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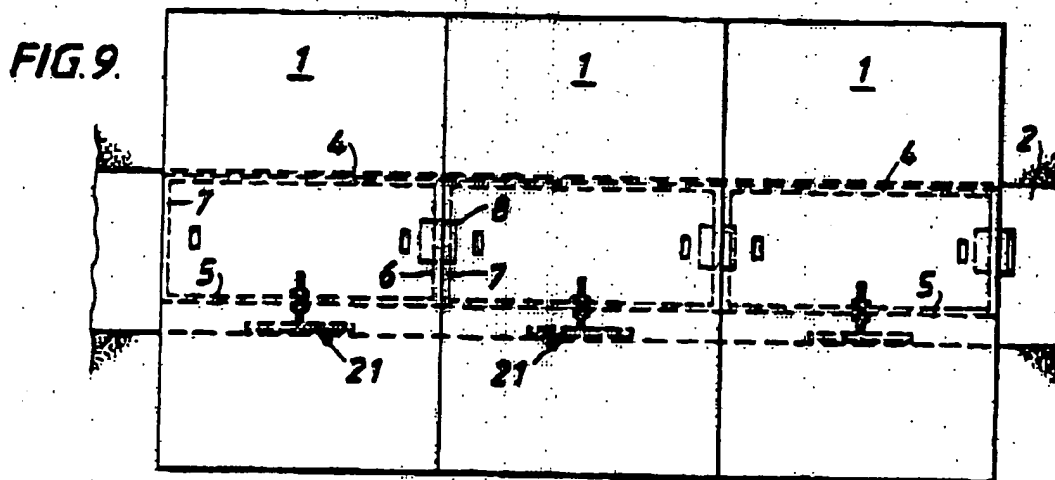
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GB 2262632 A GB 2238815 A GB 1249914 A

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UK CL (Edition N) E1G G96X  
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(54) Trench cover

(57) A trench cover for use with like covers comprises an upper plate 1 for extending across the width of a trench, and depending walls 6, 7 for inserting into the trench 2 and preventing widthwise movement of the cover with respect to the trench. The cover has a channel member 9 for receiving and locating the bottom of a wall 7 of another like cover so that a plurality of such covers can be connected together to form a line of connected covers which are prevented from being moved away from each other in the longitudinal direction of the trench. Preferably the depending walls 6, 7 are adjustable in width by means 21.



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FIG. 1.

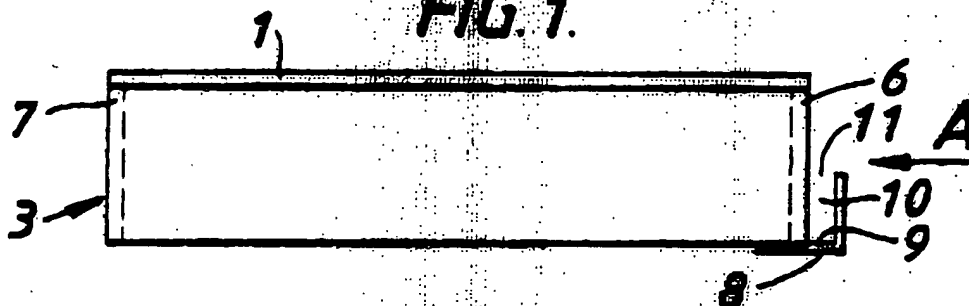
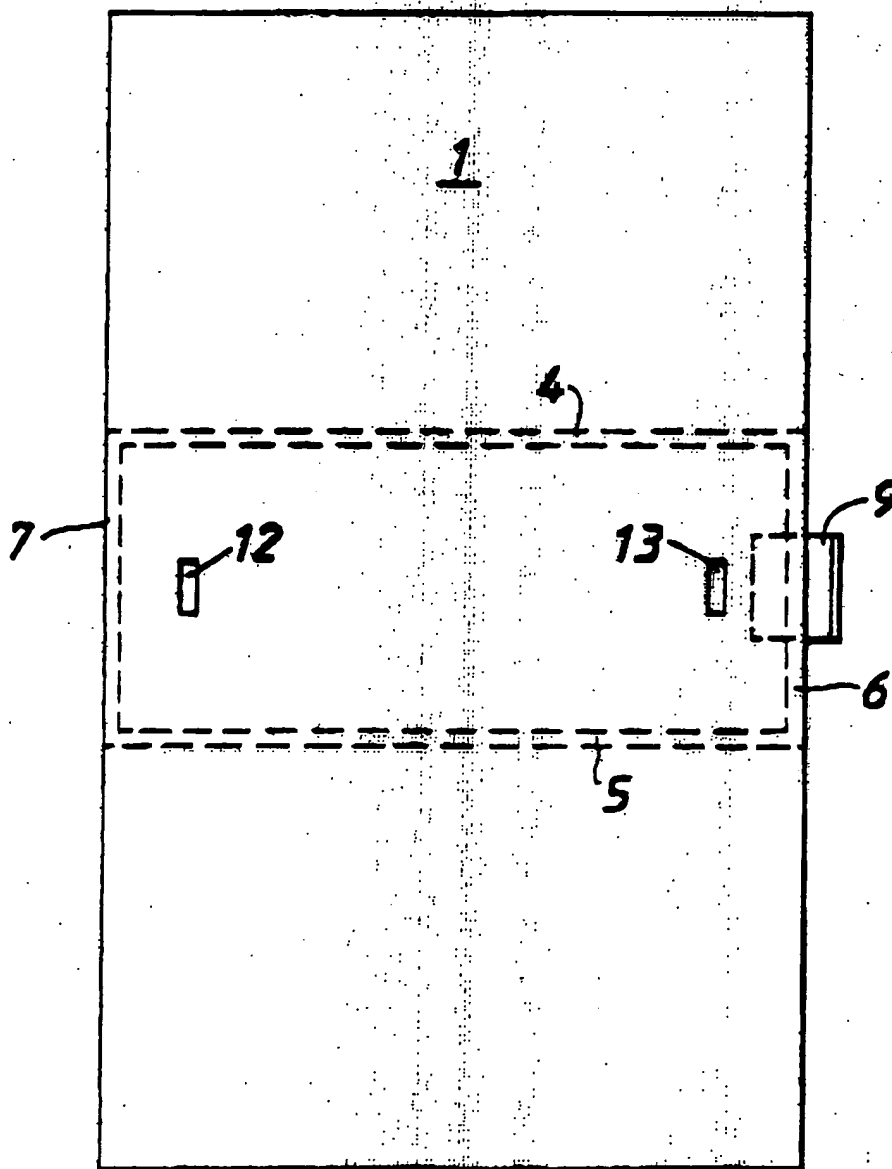
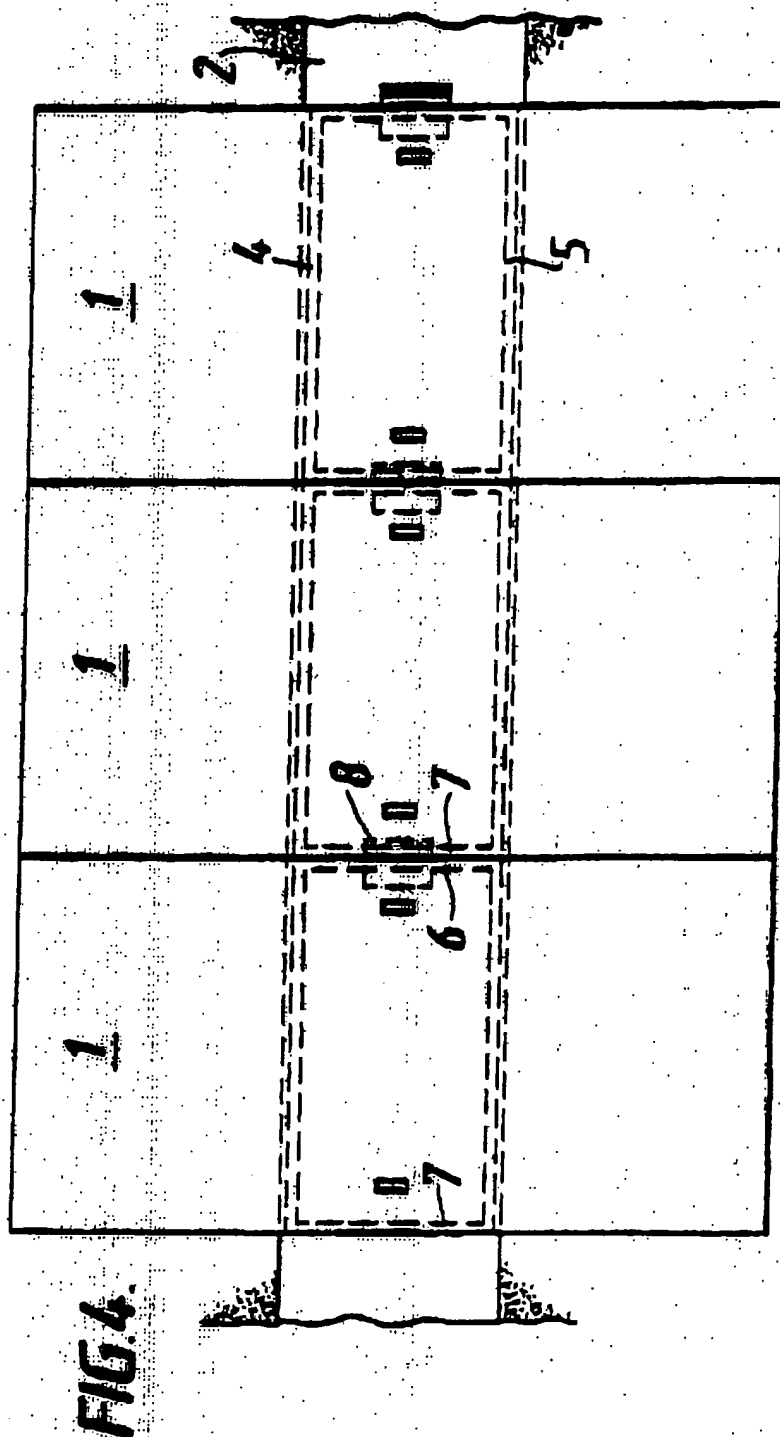
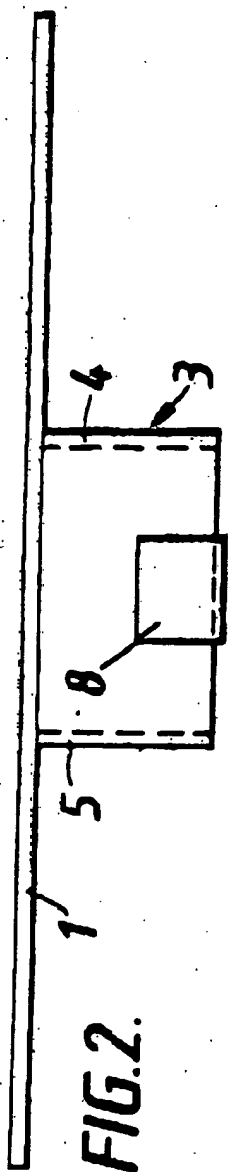


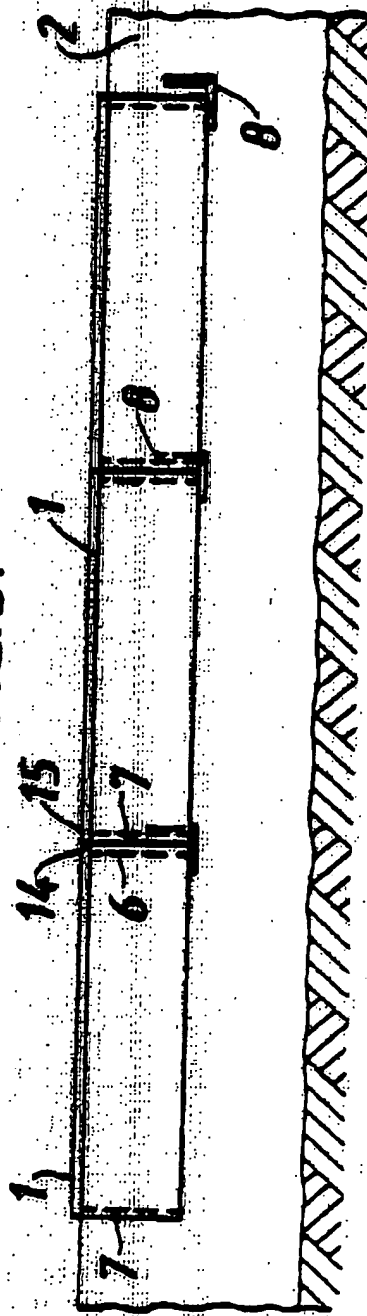
FIG. 3.





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FIG. 5.



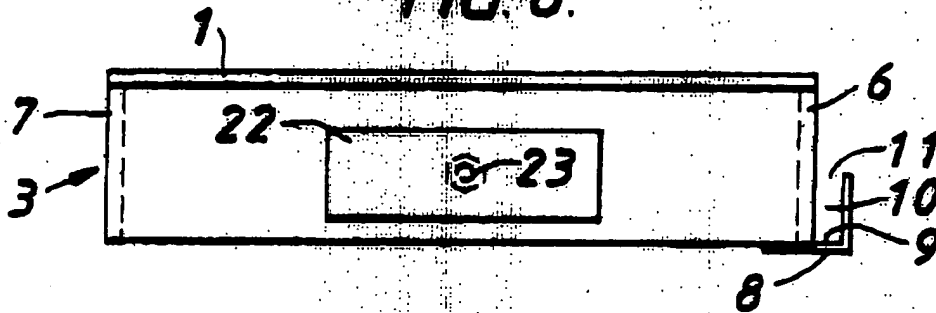
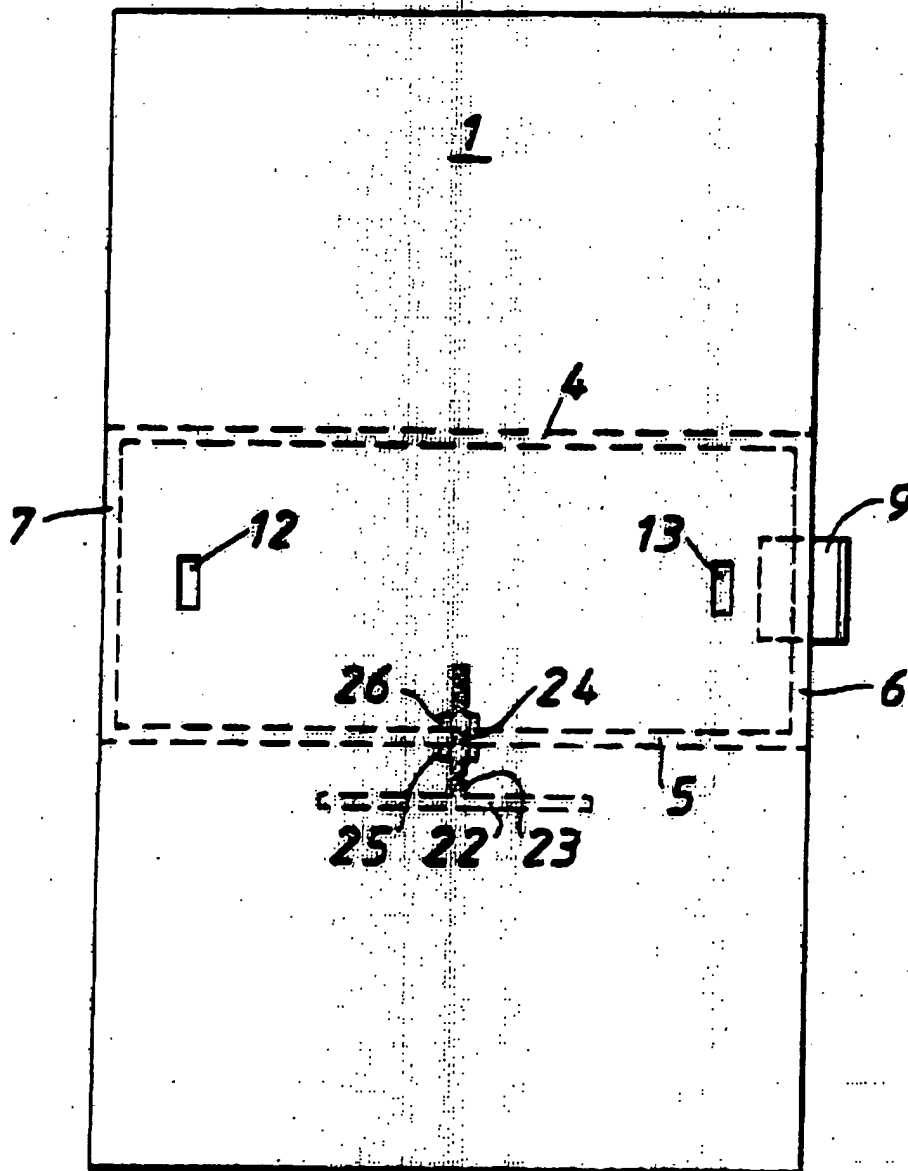
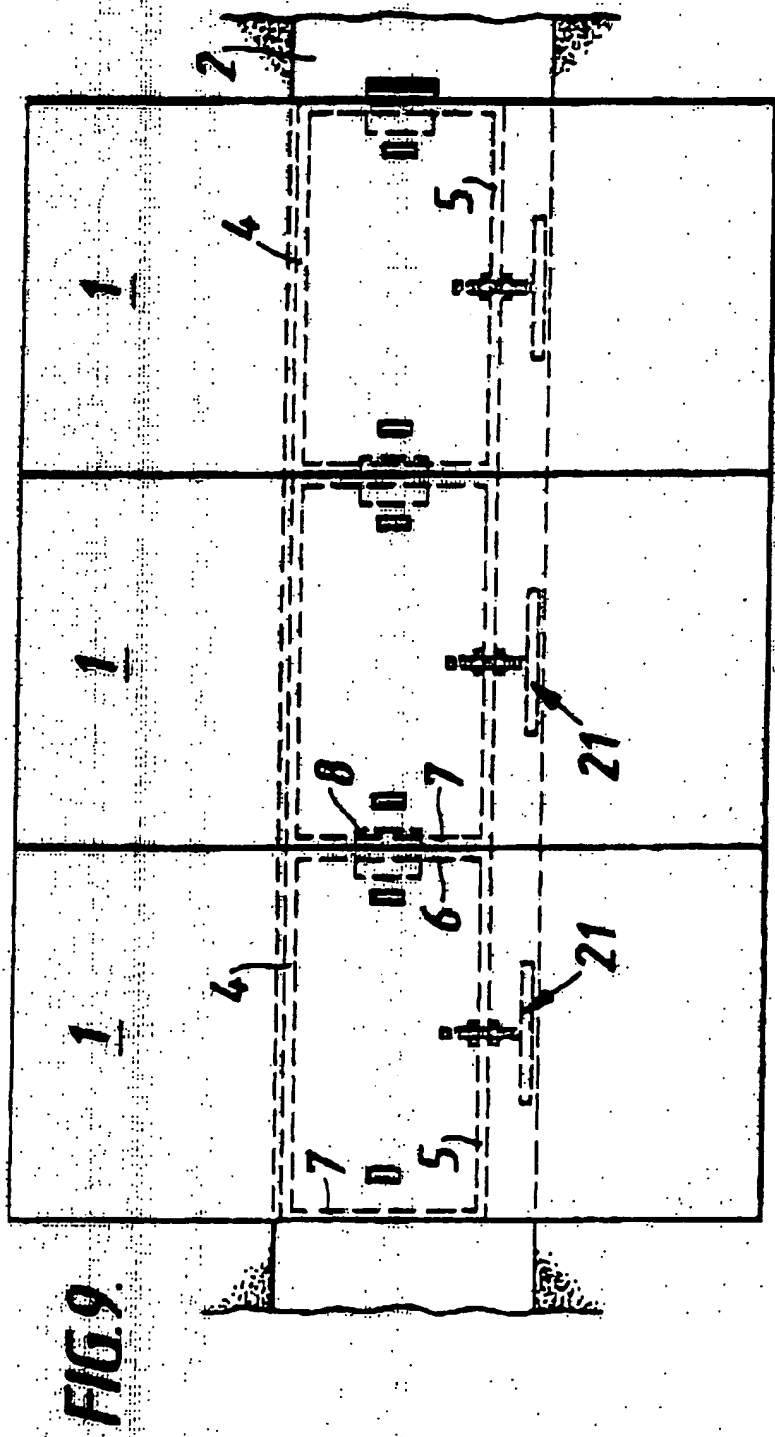
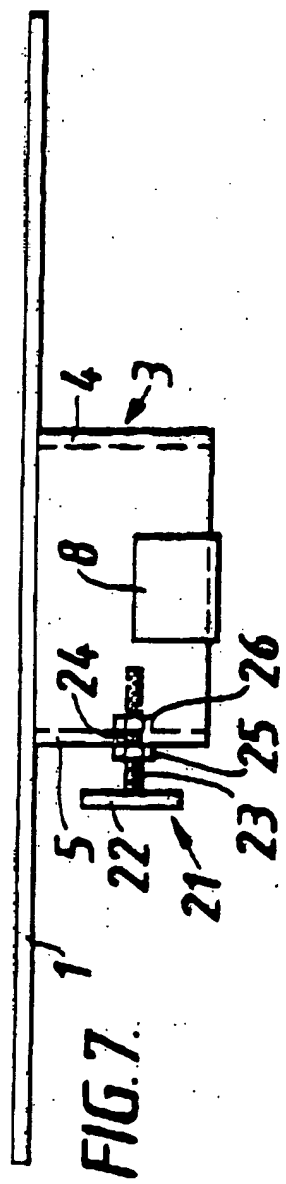
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FIG. 6.

FIG. 8.



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**2305954****TRENCH COVERS**

The present invention relates to the temporary covering over of trench excavations such as those which are made so that new pipelines may be laid.

Where the trench extends across a road, in order to enable pedestrians or traffic to cross the road while the trench is being backfilled, one section may be covered over while an adjacent section is actually being backfilled.

A known method of temporary covering a section of the trench involves employing specialist vehicles to deliver, lift and place large, heavy road plates in position across the trench. In order to secure such plates in position it is necessary to either pin them to the road surface or to cut and remove areas of the road surface so that the plates can be laid generally flush with the outlying road surface.

An object of this invention is to provide a trench cover that vercomes one or more of these problems.

According to this invention, a trench cover intended to be used with like covers, comprises a plate for extending over a trench, means depending from the plate for insertion into the trench and substantially preventing or limiting movement of the plate widthwise of the trench, and connection means and



complementary connection means which are attached to and located beneath the plate and which are arranged such that when the connection means or complementary connection means is engaged with the complementary connection means or connection means, respectively, of a plate of a like cover the plates are substantially prevented from being moved away from each other in the longitudinal direction of the plates.

Advantageously, the cover is of such a size and weight and it can be lifted and moved into position manually, conveniently by just one person.

The plate may be adapted to facilitate lifting of the cover. For example, one or more apertures may be provided in the plate to facilitate gripping of the cover such as by a person's hand or hands.

The depending means may comprise two spaced members such as two spaced walls.

The depending means may be adjustable in width so that the depending means is suitable for use in trenches of different width or where one trench varies in width along its length. Depending means may be provided with or include a width adjusting means comprising a width determining member, such as a plate or the like, that is mounted so as to be movable towards and away from a part of the depending means, and means for releasably securing the width determining member in a

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chosen position with respect to the said part of the depending means. The width determining member may be mounted on the end of a shaft or rod which is a slidable fit in an aperture in a part of the depending means, and the releasable securing means may comprise two securing members which are slidable on the shaft or rod and are located on opposite sides of the apertured part against which the securing members are securable to secure the shaft or rod and thus the width determining member in a desired position. For example, the shaft or rod may be threaded and be a screw fit in an aperture in one of the depending members of the depending means, while the two securing members may be locking nuts which can be screwed tight up against opposite sides of the said depending member.

The connection means of the cover may be a channel defining member for receiving the supplementary connection means of a like cover. For example, the mouth of the channel may open upwardly, while the supplementary connection means may be a wall or the like extending downwardly from the plate, whereby the lower end of the wall of one cover can be received in the channel of another like cover.

The cover may be so constructed that when it is connected to a like cover located in a trench in a flat surface, adjacent ends of the plates are substantially in abutment and the plates can lie substantially in the same plane.

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The invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a schematic side view of one embodiment of a trench cover according to the invention,

Figure 2 is an end view in the direction of arrow A of the cover shown in Figure 1,

Figure 3 is a plan view from above of the cover,

Figure 4 is a view from above showing covers located in a trench and connected together,

Figure 5 is a schematic side view of the connected covers in Figure 4, and

Figures 6, 7, 8 and 9 are similar to Figures 1, 2, 3 and 4, respectively, but show another embodiment of trench cover according to the invention.

Referring to the drawings, a trench cover according to the invention is made for example of steel plate and comprises a surface plate 1 for extending over an excavated trench 2 (see Figure 4), and means 3 depending from the plate 2. The depending means comprises two spaced and opposing walls 4, 5 depending from the plate, and two further depending walls 6, 7 located respectively between opposite ends of the wall 4 and

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5. The wall 4 and 5 are for insertion into the trench and preventing or substantially restricting movement of the cover widthwise of the trench when located therein.

The depending wall 6 has an angle piece 8 secured to the central part of its base to provide a connection means in the form of a channel member 9 with the channel 10 having an upwardly opening mouth 11.

The other depending wall 7 is plain and provides a supplementary connection means.

As can be seen from the Figures the walls 4, 5 and walls 6, 7 together form a box-like section made for example of welded steel sheet.

The cover may be of such a size and weight that a single person is able to lift and manoeuvre it so that the depending walls 4, 5 and walls 6, 7 are inserted into the trench to be covered. To facilitate the lifting and manoeuvring of the cover, the plate is provided with apertures 12 and 13 through which a persons fingers can be inserted.

The spacing of the two depending walls 4, 5 from each other determines the width of the depending means and is preferably such that when a cover is inserted into the trench 2 these walls are fairly closely adjacent opposite side walls of the trench and thereby prevent any significant movement of the

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cover widthwise of the trench. As can be seen from Figure 4, the plate 1 bridges the trench.

The cover is so constructed that when another like cover is used, the base of the wall 7 of one cover can be inserted or positioned in the channel 10 of the other cover. This results in the adjacent ends 14, 15 of the two plates being in substantial abutment and lying substantially in the same plane, and the plates being substantially prevented from being moved away from each other in the longitudinal direction of the trench.

Further like covers may be added successively to provide a line or row of releasably linked or connected covers across the trench.

With reference to the embodiment of trench cover shown in Figures 6 to 9, parts of which are the same as those in Figures 1 to 4 have been allotted the same reference numbers and will not be described further.

The embodiment of Figures 8 to 9 differs from the earlier embodiment by comprising means 21 for adjusting the width of the depending means 3 so that the depending means 3 is suitable for use in trenches of different width or where one trench varies in width along its length.

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The width adjusting means 21 comprises a width determining plate 22 that is connected to one end of a threaded shaft 23 which is a screw fit in an aperture 24 in the wall 5. Located on the threaded shaft 23 on each side of the wall 5 is a respective locking nut 25, 26. The plate 22 extends substantially parallel to the walls 4 and 5. It will be appreciated that the shaft may be screwed back and forth through the wall 5 so that the plate 22 can be moved towards or away from the wall 4 to decrease or increase the width of the depending means 3, i.e. the distance between the plate 22 and the wall 4. Once the plate 22 is in the desired position the locking nuts can be screwed up tight against respective opposite sides of the wall 5 to releasably secure the shaft 23 and thus the plate 22, in position.

As can be seen from Figure 9, the width adjusting means 21 has been set so that the depending means 3 can be used in a trench of greater width than that shown in Figure 4. In Figure 9, it is the plates 22 and the walls 4 that are fairly closely adjacent opposite side walls of the trench to prevent significant movement of the cover widthwise of the trench.

It will be appreciated that various advantages result from using the covers. Specialist lifting equipment is not required to deliver, position, reposition and remove the covers, since the embodiments of the cover described above are readily manoeuvrable by a single person. This leads to savings on reinstatement, labour and transport costs. As the

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covers can be positioned and removed more quickly than the known large, heavy steel plates, the disruption to traffic and/or pedestrians is considerably reduced and public relations are thereby improved. In addition, the covers described above have better skid resistance than presently frequently used large, heavy plates because the surface plates 1 are made from checker plate as opposed to conventional smooth surfaced plates which are further polished by traffic passing over them.

Whilst particular embodiments of cover have been described above it will be appreciated that various modifications may be made without departing from the scope of the invention. For example, the depending means may have two width adjusting means, one on each side. It will be apparent that the or each adjusting means may be completely removable from the depending means to leave the wall 4 and/or wall 5 as in Figures 1 to 5, except for the presence of the shaft receiving aperture 24. Alternatively, one or each of the walls 4 and 5 which are inserted in the trench may itself be mounted on the cover so as to be movable towards or away from the other one and releasably securable in different positions so that the spacing between the walls 4, 5 is adjustable.

CLAIMS

1. A trench cover intended to be used with like covers, comprising a plate for extending over a trench, means depending from the plate for insertion into the trench and substantially preventing or limiting movement of the plate widthwise of the trench, and connection means and complementary connection means which are attached to and located beneath the plate and which are arranged such that when the connection means or complementary connection means is engaged with the complementary connection means or connection means, respectively, of a plate of a like cover the plates are substantially prevented from being moved away from each other in the longitudinal direction of the plates.
2. A cover as claimed in claim 1, in which the depending means comprises two spaced members.
3. A cover as claimed in claim 2, in which the spaced members are depending walls.
4. A cover as claimed in claim 1, 2 or 3 in which the depending means is adjustable in width so as to be suitable for use in trenches of different widths.
5. A cover as claimed in claim 4, in which the depending means includes a width adjusting means comprising a width



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determining member which is mounted so as to be movable towards and away from a part of the depending means, and means for releasably securing the width determining member in position with respect to the said part of the depending means.

6. A cover as claimed in claim 5, in which the width determining member is mounted on the end of a shaft or rod which is a slidable fit in an aperture in a part of the depending means, and the releasable securing means comprises two securing members which are slidable on the shaft or rod and are located on opposite sides of the apertured part of the depending means, against which part the securing members are securable to secure the shaft or rod and thus the width determining member in position.
7. A cover as claimed in claim 6, in which the shaft or rod is threaded and is a screw fit in an aperture in one of the depending members of the depending means, and the two securing members are locking nuts.
8. A cover as claimed in any of the preceding claims, in which the connection means is a channel defining member for receiving the supplementary connection means of a like cover.
9. A cover as claimed in claim 8, in which the mouth of the channel of the channel member opens upwardly, and in

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which the supplementary connection means is a wall or the like extending downwardly from the plate.

10. A cover as claimed in any of the preceding claims, in which the cover is so constructed that when it is connected to a like cover located in a trench in a flat surface, adjacent ends of the plates are substantially in abutment and the plates lie substantially in the same plane.
11. A cover as claimed in any of the preceding claims, in which the plate is adapted to facilitate lifting of the cover.
12. A cover as claimed in claim 11, in which one or more apertures are provided in the plate to facilitate gripping of the plate.
13. A trench cover substantially as hereinbefore described with reference to Figures 1, 2, 3, 4 and 5, or Figures 6, 7, 8 and 9 of the accompanying drawings.

**Patents Act 1977****Examiner's report to the Comptroller under Section 17  
(The Search report)**12Application number  
**GB 9520296.6****Relevant Technical Fields**(i) UK Cl (Ed.N) **E1G (G96X)**(ii) Int Cl (Ed.6) **BO2D 29/14**Search Examiner  
**DAVE HAWORTH**Date of completion of Search  
**6 DECEMBER 1995****Databases (see below)**(i) UK Patent Office collections of **GB, EP, WO** and **US** patent specifications.Documents considered relevant  
following a search in respect of  
Claims :-  
**1-13**(ii) **ONLINE DATABASE WPI****Categories of documents****X:** Document indicating lack of novelty or of inventive step.**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.**A:** Document indicating technological background and/or state of the art.**P:** Document published on or after the declared priority date but before the filing date of the present application.**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.**A:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
<b>X, Y</b>	<b>GB 2238815 A</b>	<b>(BRITISH GAS)</b>	<b>X: 1-3 and 10-12 Y: 4-7, 8, 9</b>
<b>Y</b>	<b>GB 1249914 A</b>	<b>(BURGESS)</b>	<b>4-7</b>
<b>Y</b>	<b>GB 2282622 A</b>	<b>(VOCICINS)</b>	<b>8, 9</b>

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